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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LANDAU, MATTHEW C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/876,324

Applicant(s)

KENNEDY, CHANDLER J.

Examiner

Matthew Landau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 26-31 is/are pending in the application.
- 4a) Of the above claim(s) 9-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 17 and 26-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group III in Paper No. 5 is acknowledged. The traversal is on the ground(s) that "Groups III and IV are so closely related that the burden on the Examiner of combining these two groups is minimal." This is not found persuasive because the search for the process step of "pumping said laser slab with input energy from a diode array includes pumping said laser slab with pulsed light having a wavelength of about 940nm" is not required in the search for the apparatus claims.

The requirement is still deemed proper and is therefore made FINAL.

Claims 9-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the rounded and parabolic profiles of claims 29 and 30, respectively, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-7, 17, 27, 29 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claims 5-7, 17, and 27, the term "about" is a relative term which renders the claims indefinite. The term "about" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claims 29 and 30 recite the limitation "said side walls". There is insufficient antecedent basis for this limitation in the claim. Furthermore, it is unclear what is meant by the side surfaces having rounded (or parabolic) profiles in a direction perpendicular to the interface. The drawings do not show this feature; therefore, it cannot be what applicant intends to claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Honea et al.

In regards to claim 1, Figure 1 of Honea discloses an optically pumped laser device, comprising: a nonionic base layer 26; and an ionic layer 22 attached to said nonionic base layer through an optical-quality interface, a cross-section through said device in a direction perpendicular to said interface having a trapezoidal shape.

In regards to claim 4, Figure 1 of Honea discloses all cross-sections passing through said optical-quality interface have a trapezoidal shape

Claims 1, 2, 3, 5, 26, and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Vetrovec.

In regards to claim 1, Figures 16a and 16b of Vetrovec disclose an optically pumped laser device, comprising: a nonionic base layer 528; and an ionic layer 526 attached to said nonionic base layer through an optical-quality interface 51, a cross-section through said device in a direction perpendicular to said interface having a trapezoidal shape (Figure 16b).

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In regards to claim 2, the product-by-process limitation “wherein said optical-quality interface is a diffusion-bonded interface” does not structurally distinguish the claimed invention over Vetrotec.

In regards to claim 3, the product-by-process limitation “wherein said optical-quality interface is a layer-growth type interface” does not structurally distinguish the claimed invention over Vetrotec.

In regards to claim 5, as best the examiner can ascertain the claimed invention, Figure 16b of Vetrotec discloses the nonionic layer 528 and the ionic layer 526 form a laser slab, said laser slab having a bottom surface and two side surfaces, an angle between said side surfaces and said bottom surface being about 60 degrees.

In regards to claim 26, Figures 16a and 16b disclose a laser slab for use in an optically-pumped laser, comprising: a nonionic layer 528 having a bottom surface and side surfaces; and an ionic layer 526 attached to said nonionic layer along an interface 51, the bottom surface of said nonionic layer having a bottom surface area greater than an interface surface area of said interface, said side surfaces of said nonionic layer funneling optical energy from said bottom surface of said nonionic layer to said interface.

In regards to claim 28, Figure 16b of Vetrotec discloses a cross-section through said nonionic layer 528 in a direction perpendicular to said interface is trapezoidal.

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Claims 26, 27, 29, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Meissner et al. (US Pat. 5,936,984, hereinafter Meissner).

In regards to claim 26, Figure 3 of Meissner discloses a nonionic (undoped) layer 301 having a bottom surface and side surfaces; and an ionic (doped) layer 101 attached to said nonionic layer along an interface 305, the bottom surface of said nonionic layer having a bottom surface area greater than an interface surface area of said interface, said side surfaces of said nonionic layer funneling optical energy from said bottom surface of said nonionic layer to said interface.

In regards to claim 27, it is clear in Figure 3 of Meissner that the surface area of said bottom surface is at least about two times greater than said interface 305 surface area.

In regards to claim 29, as best the examiner can ascertain the claimed invention, Figure 3 of Meissner discloses the side walls are shaped so as to provide rounded profiles in a cross-section in a direction perpendicular to said interface.

In regards to claim 30, as best the examiner can ascertain the claimed invention, Figure 3 of Meissner discloses the side walls are shaped so as to provide parabolic profiles in a cross-section in a direction perpendicular to said interface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vetrotec in view of Fulbert et al. (US Pat. 6,014,393, hereinafter Fulbert).

In regards to claim 6, the difference between Vetrotec and the claimed invention is a Yb:YAG layer having a ytterbium concentration of about 15%. Fulbert discloses a YAG based laser material doped with active ions (Nd), wherein the active ion concentration is 15% (column 5, lines 40-60). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Vetrotec by using an active ion concentration of about 15%. The ordinary artisan would have been motivated to modify Vetrotec in the manner described above for the purpose of improving the pumping efficiency (column 2, lines 13-21). Note that the ordinary artisan would reasonably expect to obtain similar results using ytterbium in place of neodymium, since they are both rare earth elements and have similar properties.

In regards to claim 17, as best the examiner can ascertain the claimed invention, Figures 16a and 16b of Vetrotec disclose an optically pumped laser slab, comprising: a YAG layer 528; and a Yb:YAG layer 526 attached to said YAG layer along optical-quality interface 51 by diffusion bonding, a cross-section through said laser slab in any plane perpendicular to said optical-quality interface having a trapezoidal shape, said laser slab having a bottom surface and

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two side surfaces tilted inwardly from the bottom surface at an angle of about 60 degrees. The difference between Vetovec and the claimed invention is a Yb:YAG layer having a ytterbium concentration of about 15%. Fulbert discloses a YAG based laser material doped with active ions (Nd), wherein the active ion concentration is 15% (column 5, lines 40-60). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Vetovec by using an ytterbium ion concentration of about 15%. The ordinary artisan would have been motivated to modify Vetovec in the manner described above for the purpose of improving the pumping efficiency (column 2, lines 13-21). Note that the ordinary artisan would reasonably expect to obtain similar results using ytterbium in place of neodymium, since they are both rare earth elements and have similar properties.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vetovec in view of Tajima.

The difference between Vetovec and the claimed invention is said ionic layer has an isolation groove. Figure 1 of Tajima discloses a laser medium with an ionic layer 12 attached to a nonionic layer 11, wherein the ionic layer 12 has an isolation groove 15. In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Vetovec by including an isolation groove in the ionic layer. The ordinary artisan would have been motivated to modify Vetovec in the manner described above for the purpose of suppressing parasitic oscillation (column 6, lines 5-13).

Allowable Subject Matter

Claim 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (703) 305-4396.

The examiner can normally be reached from 8:00 AM-4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



EDDIE LEE
SUPERVISORY PATENT EXAMINER
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Matthew C. Landau

Examiner

November 17, 2002